Renewable Energy Zones



Renewable Energy Zone Meeting

September 29, 2009

Debbie Lew NREL

Overall Direction

- Act 155 (June 2009) requires DBEDT to:
 - Identify Renewable Energy Zones (REZ) renewables rich areas that are cost-effective and environmentally benign
 - Encourage development of these REZs and transmission to access these zones
- HCEI agreement calls for REZ to be performed in conjunction with Clean Energy Scenario Planning (CESP) and for transmission access to be facilitated



Adaptation of REZ for Hawaii

- Originally developed to address:
 - Long distance transmission development to renewables rich areas and
 - Cost recovery for transmission built in advance of generation because transmission lead times are longer than renewables
- Hawaii needs
 - Publicly accessible, higher resolution, higher accuracy renewable energy resource data
 - Information on where development faces significant land-use/ permitting hurdles
 - Facilitation of transmission expansion/upgrades to access renewables
 - Facilitation of development of projects (policies, incentives, streamlined permitting, etc)

DBEDT's Bottom Line

- DBEDT wants to be proactive and help developers get projects in the ground and help utilities facilitate the needed infrastructure
- DBEDT is wary of unintended consequences and getting in the way of other processes
 - REZ designation may drive land costs up for developers
 - Strong incentives for REZ projects may stall out existing project development
 - Existing law doesn't add any real authority to what DBEDT is already doing



Initial REZ Tasks

- Assess and update renewable energy resource datasets
- Develop GIS-based web interface for resource data
- Develop tiered criteria for screening based on land use, environmental constraints, etc. Ease of permitting could be included.
- Identify renewable resource areas of high quality and sufficient quantity. Develop preliminary cost of energy assessments.
- Feed into CESP information on where resources are, when new technologies are projected to be mature, cost of energy curves



Resource datasets

- Wind
 - 200m AWS maps, 1km AWS time-series dataset
- Geothermal resource
 - 2004 GeothermEx
- Wave Energy
 - Bathymetry-based hard copy maps, new assessments by EPRI and Army Corps of Engineers
- Hydro
 - New assessments by Army Corps of Engineers, INEEL study
- OTEC
 - UH analysis
- Solar
 - Sunshine maps, 10 km SUNY/Albany data, 1km satellite data



EXTRA SLIDES



Coordination of REZ and CESP

DBEDT Identify zones – (HECO participation on working groups)

- Resource assessment and cost analysis
- Environmental and land-use exclusions

Combined Undertake transmission and integration studies – (HECO & DBEDT in TRC)

- Conceptual transmission overlays and delivered cost of energy analyses
- Refine transmission build-outs and scenarios
- Undertake grid integration simulations and analyses
- Identify needed generation resources and operational requirements/impact of integrating REZ
- Identify and cost specific integration projects

HECO CESP (DBEDT participation in advisory committee)

- Incorporate zones into broader scenario analyses
- Identify preferred clean energy scenarios
- Identify Action Plan items related to REZ development and integration

DBEDT Implementation

- · Design incentives
- Provide project assistance through facilitation of SPRB financing
- Provide project permitting assistance

